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ABSTRACT

A virtual keyboard device includes a surface, a static pattern electrostatic haptic electrode disposed on an area of the surface, the static pattern electrostatic haptic electrode defining voids on the area of the surface between contiguous portions of the static pattern electrostatic haptic electrode, insulating material disposed on the static pattern electrostatic haptic electrode, and a controller operable to apply a voltage to the static pattern electrostatic haptic electrode. Application of the voltage to the static pattern electrostatic haptic electrode may produce a variable friction between a conductive object and the insulating material as the conductive object moves across the insulating material. In some implementations, the surface may be part of a display device that is configured to display a virtual key of a virtual keyboard in the area.

